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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
LEE, TIMOTHY L	

ART UNIT	PAPER NUMBER
2662	7

DATE MAILED: 01/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/540,779	EBERLE ET AL.	
	Examiner	Art Unit	
	Timothy Lee	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,5-25,27-33,36,37 and 39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5-25,27-33,36,37 and 39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 5-12, 14-25, 27-33, 36-37, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turner (US 6,141,329) in view of Whitehill et al. (US 6,404,756).

3. Turner discloses a dual-channel real-time communications system. As shown in Fig. 1, the communication system includes a first communication station 12A and a second communication station 12B (a data network comprising...a sending node...a receiving node). See col. 3, lines 23-43. Each of the hosts 14A and 14B are connected to a real-time data port of a real-time channel interface and to a best-efforts data ports of a best-efforts channel interface. This is also shown in Fig. 1. As shown by the names of the two transmission channels, data that is delay-sensitive is sent over the real-time connection, and data that doesn't need to be continuous can be sent over the best-efforts channel—these two different transmission channels from two different groups of transmission. See also col. 4, line 29-col. 5, line 7. The "predetermined criteria" can be the delay sensitivity required by the data packets. Also, Turner discloses that the real-time channel can also be a packet-based channel with a certain guaranteed latency, and the best-efforts channel can be a packet-switched channel, such as an internet connection (node coupled to receive a plurality of information packets from the sending node). See col. 5, lines 8-27.

4. Regarding claims 1, 14, and 36, Turner does not expressly disclose that the scheduling information related to the high bandwidth channel is transmitted over the low latency channel. Whitehill et al. discloses transmitting requests for data channel access on a separate reservation channel. See col. 3, lines 6-36. Whitehill et al. also discloses the nodes have receive circuits that monitor the reservation channel to see if there are any requests to send over the data channels. When the sending terminal is clear to send, the receiving terminal sends a CTS message over the reservation channel to request to send has been granted. Thus, the receiving circuits act as scheduling circuits. See also Figs. 1 and 3b. It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the teachings of Whitehill et al. concerning the transmission of reservation information in Turner by treating the low-latency channel as a type of "reservation channel" for the best efforts channel. One of ordinary skill in the art would have been motivated to do this because having the reservation or scheduling information sent in a timely manner is critical in real-time traffic such as voice over IP. See col. 3, lines 59-62 of Whitehill et al.. Also, Turner suggest that signals from the same source can be broken up by sending some of the signal over the low latency channel and the rest of the signal over the best efforts channel. As an example, Turner states that in telephone conversations, the background noise, which doesn't change much throughout the call, can be sent over the best efforts channel, while the speaker's changing voice can be sent over the real-time, high cost channel. This example from Turner suggests that it would be reasonable to send more critical information (like scheduling information) over the real time channel and still send the actual data over the best efforts channel.

5. Regarding claims 5, 22, 24, 30, 31, and 33, "reliability needs" are similar reservation messages, so this has already been discussed. The combination of Turner and Whitehill et al. does not expressly disclose where the security needs of a packet are used in determining which channel to send the packet over (and also taking into account protocol information). However, it would have been obvious to a person of ordinary skill in the art at the time of the invention to also take into security concerns when deciding which channel to send the data over. One would have been motivated to do this because one would not want to send sensitive data over a channel that was unsecured. If only one of the two channels is secure, then one would necessarily want to send the data with security concerns over that channel as opposed to the other channel.

6. Regarding claims 6 and 7, Turner discloses that the channel setup module is responsible for control to the real-time or the best-efforts channel. Turner also discloses that the various blocks of the system can be implemented using special purpose hardware, software on a general purpose or special purpose processors or a combination of both. Software of a general purpose would qualify as a system program.

7. Regarding claim 10, Turner does not expressly disclose that the data network is a switched data network having at least one switch for each channel, but it would have been obvious to include at least one switch for each channel, meaning that for two channels, there would be two switches. One would have been motivated to do this because switched networks have certain advantages over non-switched networks when it comes to timing and reliability. Also, Turner discloses that "the real-time channel interface can be a telephone line interface operatively connected to a conventional circuit-switched telephone network and the best efforts

channel interface can be a network interface operatively connected to a global packet-based network." See col. 1, lines 43-47.

8. Regarding claims 11, 32, and 37, Turner does not expressly disclose that one of the sending and the receiving node includes a plurality of buffer descriptors identifying memory segments containing data. However, it is well-known in the art that sending and receiving nodes can have buffers (and buffer descriptors). It would have been obvious to a person of ordinary skill in the art at the time of the invention to

9. Regarding claim 12, the two hosts combine to form a cluster network.

10. Regarding claim 15, in sending the clear to send and request to send messages, Whitehill et al. discloses that time delays can be set to depending on network conditions. See col. 8, lines 21-42.

11. Regarding claim 16, the combination of Turner and Whitehill et al. does not expressly disclose unique identifiers identifying the nodes. However, it would have been obvious that the receiving and sending nodes would have unique identifiers. One would have been motivated to do this because there must some way to differentiate among nodes when requests and grants are being transferred.

12. Regarding claim 17, as mentioned previously, the clear to send signal is sent over the reservation channel (or in the case of the combination of Whitehill et al. and Turner, it would be sent over the real-time channel). The combination of Whitehill et al. and Turner does not expressly disclose sending the grant indication with a higher priority than the rest of the traffic on the real-time channel, but it would have been obvious to do so. As mentioned earlier with regard to the ACK signals, one would have been motivated to send the clear to send signals with

higher priority because the system might be more efficient in some cases if the sender node can receiver the CTS signal as soon as possible.

13. Regarding claim 18, Whitehill et al. discloses that when network traffic is heavy, the system will send the RTS and other messages at random intervals so as to avoid collisions. See at leastcol. 8, lines 42-53.

14. Regarding claim 19, Turner does not expressly disclose sending acknowledgment messages over the real-time channel. Whitehill et al. discloses sending a clear to send (CTS) signal over the reservation channel. See Fig. 3b. A CTS signal is a type of acknowledgement signal to the original request. It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the teachings of Whitehill et al. regarding CTS signals in Turner so that acknowledgment signals could be sent over the real-time channel. One would have been motivated to do this because the sender might want to know with certainty whether or not the data arrived to the receiver correctly. The motivation behind sending it over the real-time channel is that sometimes the sender won't send the next packet until it has received an ACK for the previous packet that was sent, so to keep the system from backlogging, it will save time to send the ACK's over the real-time channel.

15. Regarding claim 20, the combination of Turner and Whitehill et al. does not expressly disclose sending the ACK with a higher priority than the other real-time traffic, but it would have been obvious to send the ACK with a higher priority. One would have been motivated to do this because as mentioned previously, it might be necessary for the sender to receive an ACK before it sends another packet, so it would benefit the overall system efficiency if this ACK can arrive back at to the sender as soon as possible.

16. Regarding claim 21, as mentioned previously, the two channels of Turner have different characteristics to transfer different types of data.

17. Regarding claims 23 and 25, as mentioned previously, the two channels of Turner are two different channels, so they are independent. Also, one of the channels handles real-time traffic (low latency channel), and the other channel handles best efforts (high bandwidth).

18. Regarding claim ~~26~~ 27, as mentioned previously, it is advantageous to send certain types of information with higher priorities because the certain types of information are more time-critical than other types of information. Control information would qualify as this type of information.

19. Regarding claim 28, the combination of Turner and Whitehill et al. does not expressly disclose where a higher priority packet prevents the packet from being dropped, but it is well-known in the art that higher priority packets are often not dropped. It would have been obvious not to drop the higher priority packets in the combination of Turner and Whitehill et al.. One would have been motivated to do this because higher priority packets need to get through in order to keep the system going while data packets often can be retransmitted without any detriment to the operations of the system.

20. Regarding claim 29, Turner discloses sending data that changes often in telephone conversations over the real-time channel while sending the data that isn't changing (and thus is more highly scheduled) over the best-efforts channel. See col. 5, lines 60-67.

21.

22. Claims 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Turner in view Whitehill et al., in further view of Hsieh (US 6,212,194) and in light of the rejection to claim 1. Turner does not expressly disclose having separate and receive buffers for the first and second

transmission channels. Hsieh discloses having send and receive buffers in each of the nodes. See Fig. 1. It would have been obvious to a person of ordinary skill in the art to have a send and receive buffer for each of the channels. One would have been motivated to do this because this allows data to be stored and held before it is transferred to another location, which could be full and cannot take data at an immediate moment.

Response to Arguments

23. Applicant's arguments with respect to claims 1, 5-25, 27-33, 36-37, and 39 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy Lee whose telephone number is (703)305-7349. The examiner can normally be reached on M-F, 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (703)305-4744. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

TLL

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